



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
PO Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,131	01/12/2001	Yuusuke Minagawa	040356/0352	8894

22428 7590 06/17/2003

FOLEY AND LARDNER
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

CUEVAS, PEDRO J

ART UNIT	PAPER NUMBER
----------	--------------

2834

DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/758,131	MINAGAWA, YUUSUKE	
	Examiner	Art Unit	
	Pedro J. Cuevas	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 03 March 2003 .

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.
Disposition of Claims

Disposition of Claims

4) Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-14 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). _____ .
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3/03 . 6) Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1 and 11 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

2. The indicated allowability of claims 12-14 is withdrawn in view of the reference(s) to Koide et al. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,793,136 to Redzic in view of U.S. Patent No. 4,749,898 to Suzuki et al.

Redzic discloses the construction of a differential motor/generator apparatus comprising:

a first rotor (12) provided with a plurality of magnetic poles by a magnet (column 4, lines 13-18);

a second rotor (14) provided with a plurality of magnetic poles by a magnet (column 4, lines 39-44), the first rotor and the second rotor being coaxially and concentrically disposed and rotating independently from each other; and

a stator (16) provided with a plurality of stator coils (40', 40'', and 40''') which is configured to apply a first rotational force (\emptyset_1'') on the first rotor and a second rotational

force (\mathcal{O}_1') on the second rotor (as explained on column 5, line 52 to column 6, line 12) to cause the first rotor and the second rotor to rotate independently from each other, when a composite poly-phase alternating current (three phase AC motor operation – column 4, lines 13-18) is supplied to the stator excitation coils; wherin:

the number of magnetic poles in the magnet provided in the first rotor is equal to the number of poles in the magnet provided in the second rotor;

the composite poly-phase alternating current comprises an alternating current forming a rotating magnetic field applying a rotational force (\mathcal{O}_1'') on the first rotor and an alternating current forming a rotating magnetic field applying a rotational force (\mathcal{O}_1') on the second rotor (as explained on column 5, line 52 to column 6, line 12); and

an exciting circuit or electronic device of known type, which excites a part of the rotor coils.

However, it fails to disclose a rotor provided with a plurality of magnetic poles by a magnet and a plurality of rotor coils.

Suzuki et al. teach the construction of a super-precision positioning device having rotors with a plurality of magnetic poles by a magnet and a plurality of rotor coils (magnet 24 & coil 25) on each rotor, for the purpose of driving the rotors.

It would have been obvious to one skilled in the art at the time the invention was made to use the super-precision positioning device disclosed by Suzuki et al. on the differential motor/generator apparatus disclosed by Redzic for the purpose of driving the rotors.

5. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,793,136 to Redzic in view of U.S. Patent No. 4,749,898 to Suzuki et al. as applied to claims 1-4 above, further in view of U.S. Patent No. 6,005,317 to Lamb.

Redzic in view of Suzuki et al. discloses the construction of a motor/generator as described above.

However, it fails to disclose a motor/generator, wherein:

one of the first rotor and second rotor rotates the other of the first rotor and the second rotor in synchronization by suspending the excitation of the part of the rotor coils by the exciting circuit and suspending the supply of the composite poly-phase alternating current to the stator coils;

the second rotor is provided with a plurality of pairs of the rotor coils and the motor/generator functions as a magnetic coupling in which one of the first rotor and second rotor rotates the other of the first rotor and the second rotor in synchronization by exciting a specific pair of the rotor coils by a second exciting current and suspending the supply of the composite poly-phase alternating current to the stator coils;

one of the first rotor and second rotor rotates the other of the first rotor and the second rotor in synchronization by supplying a third exciting current to the part of the rotor coils which flows in a direction opposite to the first exciting current, and suspending the supply of the composite poly-phase alternating current to the stator coils; and

the second rotor is provided with a plurality of pairs of the rotor coils and the motor/generator functions as a magnetic coupling, which varies a coupling force according to an excitation state of the plurality of pairs of the rotor coils.

Lamb teaches the construction of an adjustable coupler having a group of magnet rotors with permanent magnets separated by air gaps from non-ferrous conductor elements presented by a group of conductor rotors, wherein:

one of the first rotor (25) and second rotor (26) rotates the other of the first rotor and the second rotor in synchronization by suspending the excitation of the part of the rotor coils by the exciting circuit and suspending the supply of the composite poly-phase alternating current to the stator coils;

the second rotor is provided with a plurality of pairs of the rotor coils and the adjustable coupler functions as a magnetic coupling (25 + 26) in which one of the first rotor and second rotor rotates the other of the first rotor and the second rotor in synchronization by exciting a specific pair of the rotor coils by a second exciting current and suspending the supply of the composite poly-phase alternating current to the stator coils;

one of the first rotor and second rotor rotates the other of the first rotor and the second rotor in synchronization by supplying a third exciting current to the part of the rotor coils which flows in a direction opposite to the first exciting current, and suspending the supply of the composite poly-phase alternating current to the stator coils; and

the second rotor is provided with a plurality of pairs of the rotor coils and the adjustable coupler functions as a magnetic coupling, which varies a coupling force according to an excitation state of the plurality of pairs of the rotor coils for the purpose of providing a mechanical alternative to VSD's which is far more economical, will automatically maintain the speed of the load to a preset speed as the load requirements vary, and will not require modification of the electric motor or adjustment of the input voltage of frequency.

It would have been obvious to one skilled in the art at the time the invention was made to use the adjustable coupler disclosed by Lamb on the differential motor/generator apparatus disclosed by Redzic in view of Suzuki et al. for the purpose of providing a mechanical alternative to VSD's which is far more economical, will automatically maintain the speed of the load to a preset speed as the load requirements vary, and will not require modification of the electric motor or adjustment of the input voltage of frequency.

6. Claims 9 & 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,793,136 to Redzic in view of U.S. Patent No. 4,749,898 to Suzuki et al. as applied to claims 1-4 above, further in view of U.S. Patent No. 5,124,606 to Eisenbeis.

Redzic in view of Suzuki et al. discloses the claimed invention except for a motor/generator, wherin:

the plurality of the rotor coils are connected in series and are excited by a direct current; and
two collector rings which supply an exciting current to the pair of the rotor coils.

Eisenbeis teaches the construction of a driving motor having a plurality of coils (4) connected in series and are excited by a direct current; and collector rings (11), which supply an exciting current to the pair of the rotor coils for the purpose of determining the speed and direction of the main rotor.

It would have been obvious to one skilled in the art at the time the invention was made to use the driving motor disclosed by Eisenbeis on the motor/generator disclosed by Redzic in view of Suzuki et al. for the purpose of determining the speed and direction of the main rotor.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,793,136 to Redzic in view of U.S. Patent No. 4,749,898 to Suzuki et al. as applied to claims 1-4 above, further in view of U.S. Patent No. 5,117,141 to Hawsey et al.

Redzic in view of Suzuki et al. discloses a differential motor/generator apparatus as described above.

However, it fails to disclose a motor/generator having a device, which limits the rotation of the second rotor in a specified direction.

Hawsey et al. teaches the construction of a brushless dc permanent magnet motor with a drive unit, which limits the rotation of the second rotor in a specified direction for the purpose of causing a rotation of the two shafts connected to the rotors in opposite direction as stated in the Abstract.

It would have been obvious to one skilled in the art at the time the invention was made to use the differential motor/generator apparatus on the motor/generator disclosed by Redzic in view of Suzuki et al. for the purpose of causing a rotation of the two shafts connected to the rotors in opposite direction.

8. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,793,136 to Redzic in view of U.S. Patent No. 4,749,898 to Suzuki et al. as applied to claims 1-4 above, and further in view of U.S. Patent No. 5,936,312 to Koide et al.

Redzic in view of Suzuki et al. discloses a differential motor/generator apparatus as described above.

However, it fails to disclose:

- the first rotor being connected to a drive wheel of a vehicle;
- the second rotor being connected to an engine mounted in the vehicle;
- the rotation limitation device comprises a one-way clutch which is interposed between the engine and the second rotor, and limits relative rotation of the first rotor and the second rotor; and
- a device which locks the rotation of the first rotor.

Koide et al. teach the construction of a power output apparatus and method of controlling the same having:

- the first rotor being connected to a drive wheel of a vehicle;
- the second rotor being connected to an engine mounted in the vehicle;
- the rotation limitation device comprises a one-way clutch (30) which is interposed between the engine and the second rotor, and limits relative rotation of the first rotor and the second rotor; and
- a device which locks the rotation of the first rotor;

as shown in Figures 2, 14, 17, 19, 22, 39, and 41; for the purpose of providing a system to carry out control and enable an engine to output a desired power.

It would have been obvious to one skilled in the art at the time the invention was made to use the power output apparatus disclosed by Koide et al. on the differential motor/generator apparatus disclosed by Redzic in view of Suzuki et al. for the purpose of providing a system to carry out control and enable an engine to output a desired power.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (703) 308-4904. The examiner can normally be reached on M-F from 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramírez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Pedro J. Cuevas
June 13, 2003

